

Welcome to Sixth Grade Accelerated Math. We are looking forward to a great 2016-2017 school year. This summer assignment reviews some of the key concepts necessary to build a strong foundation for accelerated math. The key concepts covered in this summer review are:

- Solving positive decimal problems with all four operations (add, subtract, multiply, divide)
- Solving positive fraction problems with all four operations
- Converting/comparing fractions, decimals, and percentages
- Solving integers problems with all four operations
- Solving problems with proportions (including conversions within a measurement system)
- Solving questions using general problem solving strategies

For full credit, show all work on separate sheets of notebook paper.


Your sixth grade accelerated math teacher will collect this assignment during the first week of school.

You are responsible for knowing the concepts on this assignment.

Note that there are a total of 70 questions on this assignment.

DECIMALS

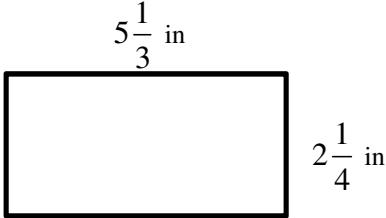
| | | |
|----|---|--|
| 1. | <p>Mrs. Arnold weighed several different cantaloupes at the grocery store.</p> <p style="text-align: center;">Cantaloupe A = 6.82 pounds Cantaloupe C = 6.7 pounds Cantaloupe B = 6.804 pounds Cantaloupe D = 6.79 pounds</p> <p>List the cantaloupes in order from heaviest to lightest.</p> | |
| 2. | <p>Ellen wanted to buy the following items: A DVD player for \$49.95, A DVD holder for \$19.95, and personal stereo for \$21.95.</p> <p>Does Ellen have enough money to buy all three items if she has \$90?</p> | |
| 3. | <p>Patricia has \$425.82 in her checking account. How much does she have in her account after she makes a deposit of \$120.75 and a withdrawal of \$185.90?</p> | |
| 4. | <p>The mass of a jar of sugar is 1.9 kg. What is the total mass of 13 jars of sugar?</p> | |
| 5. | <p>Carpeting costs \$9.99 a yard. If Jan buys 17.4 yards, how much will it cost her? (Round your answer to the nearest hundredth.)</p> | |
| 6. | <p>Brad studied a total of 24.4 hours over a period of four days. On average, how many hours did Brad study each day?</p> | |
| 7. | <p>Samantha paid \$26.25 for three books that all cost the same amount. What was the cost per book?</p> | |

| 8. | <p>To find the perimeter of a shape one may just add all the sides together. Find the perimeter of the rectangle below.</p> <div style="text-align: center;"> <p>8.75 in</p>  <p>2.4 in</p> </div> | | | | | | | | | | | |
|----------------|---|------|------|--------------|--------|----------------|--------|-------------|--------|-------|--------|--|
| 9. | <p>To find the area of a rectangle one may use the formula $A = lw$. Find the area of the rectangle in the problem above.</p> | | | | | | | | | | | |
| 10. | <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: center;">Item</th> <th style="text-align: center;">Cost</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Movie Ticket</td> <td style="text-align: center;">\$8.25</td> </tr> <tr> <td style="text-align: center;">Medium Popcorn</td> <td style="text-align: center;">\$6.00</td> </tr> <tr> <td style="text-align: center;">Medium Soda</td> <td style="text-align: center;">\$4.75</td> </tr> <tr> <td style="text-align: center;">Candy</td> <td style="text-align: center;">\$3.50</td> </tr> </tbody> </table> <p>Find the total cost of two Medium Sodas, two Medium Popcorns, and two Movie tickets.</p> | Item | Cost | Movie Ticket | \$8.25 | Medium Popcorn | \$6.00 | Medium Soda | \$4.75 | Candy | \$3.50 | |
| Item | Cost | | | | | | | | | | | |
| Movie Ticket | \$8.25 | | | | | | | | | | | |
| Medium Popcorn | \$6.00 | | | | | | | | | | | |
| Medium Soda | \$4.75 | | | | | | | | | | | |
| Candy | \$3.50 | | | | | | | | | | | |
| 11. | <p>Use a division problem and the table above to solve: If the weight of the candy is 2.5 ounces, how much does it cost per ounce?</p> | | | | | | | | | | | |
| 12. | <p>Use a division problem and the table above to solve: If Marty spent \$66 on movie tickets, how many tickets did he buy?</p> | | | | | | | | | | | |
| 13. | <p>Leon bought a dozen daisies for \$3.75. To the nearest cent, how much did Leon pay for each daisy?</p> | | | | | | | | | | | |

FRACTIONS

All fraction problems should be solved using fractions and all answers should be in fraction form.

| | | |
|-----|---|--|
| 14. | <p>A recipe calls for $\frac{3}{8}$ cup of chocolate chips and $1\frac{1}{2}$ cups of walnuts. Tameka wants to double the recipe. How many cups of chocolate chips and walnuts will she use?</p> | |
| 15. | <p>A concert was $3\frac{5}{8}$ hours long. The first musical piece lasted $\frac{1}{3}$ hour. The intermission lasted $\frac{3}{4}$ hour. How many hours was the rest of the concert?</p> | |
| 16. | <p>Josh lives 21 miles from work. If his mother drives him $\frac{2}{3}$ of the way, how much further will Josh have to walk to get to work?</p> | |

| | | |
|-----|--|--|
| 17. | Marcia has seven packages of peanuts; each contains $\frac{2}{3}$ cups. Marcia needs six cups of peanuts to make peanut brittle. How many more cups does she need? | |
| 18. | Bob worked for $\frac{5}{6}$ hour. He tiled his garden for $\frac{1}{2}$ hour, planted seeds for $\frac{1}{6}$ hour, and watered for the rest of the time. For what part of an hour did Bob water? | |
| 19. | Vic and his teammates had $1\frac{1}{10}$ hours to practice drills and run laps. If they ran for $\frac{2}{5}$ hour, how long did they practice drills? | |
| 20. | Each member of the art club must contribute at least $\frac{3}{4}$ of the \$200 expense toward a trip to New York City. Mr. Janos raised \$140, Ms. Greco raised \$155 dollars, Mrs. Vinci raised \$160 and Dr. Artemisia raised \$175. Who has contributed the amount closest to $\frac{3}{4}$ of the amount needed? | |
| 21. | <p>To find the perimeter of a shape one may just add all the sides together. Find the perimeter of the rectangle below.</p> <div style="text-align: center;">  <p style="margin-left: 100px;">$5\frac{1}{3}$ in</p> <p style="margin-left: 200px;">$2\frac{1}{4}$ in</p> </div> | |
| 22. | To find the area of a rectangle one may use the formula $A = lw$. Find the area of the rectangle in the problem above. | |
| 23. | A serving of walnuts is $\frac{1}{4}$ of a cup. How many servings are there in a $1\frac{1}{2}$ -cup bag of walnuts? | |
| 24. | Julie's bird feeder holds $9\frac{5}{8}$ cups of birdseed. Julie is filling the bird feeder with a scoop that holds $1\frac{3}{8}$ cups. How many scoops of birdseed will Julie put into the feeder? | |
| 25. | A cookie factory uses 3 bags of flour in each batch of cookies. The factory used $3\frac{3}{4}$ bags of flour yesterday. How many batches of cookies did the factory make? | |

FRACTION-DECIMAL-PERCENTAGES

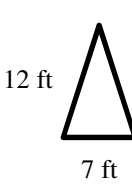
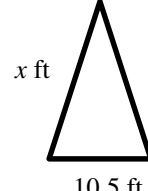
| | | |
|-----|---|--|
| 26. | About 35% of the people who come to the park bring a dog. $\frac{2}{5}$ of people who come to the park exercise. Which group of people represents a larger percent of the people coming to the park? | |
| 27. | In a survey of favorite ice cream, mint chocolate chip received 22% of the votes. Chocolate received $\frac{1}{4}$ of the votes and vanilla received 0.37 of the votes. Order the flavors from most to least popular. | |
| 28. | Bart conducted a music survey among his friends. He reported that 0.42 prefer pop, 22% prefer rock, and $\frac{2}{5}$ prefer country. Explain what's wrong with Bart's results. | |
| 29. | Heavy rains fell on 52% of the country on Monday and $\frac{12}{25}$ of the country on Tuesday. On which day did a greater portion of the country receive rain? | |
| 30. | Mr. Davis's students were surveyed of their favorite subject. One fifth prefer math, 0.35 prefer social studies, and 45% prefer reading. Order the subjects from least favorite to most favorite. | |
| 31. | Forty percent of the students in Mrs. Henry's fourth grade class are 9 years old. Another 0.25 are 10 years old, and the rest of the class is 11 years old. Write the number of students that are 11 years old as a fraction, decimal, and percent. | |
| 32. | Convert $3\frac{3}{8}$ to a decimal and a percentage. | |
| 33. | Convert 0.01% to a fraction and a decimal. | |
| 34. | Convert 6.65 to a percentage and a fraction. | |
| 35. | Convert $\frac{5}{11}$ to a decimal and a percentage. | |

INTEGERS

| | | | | | |
|-----|-----------------|--|-----|------------------|--|
| 36. | $-9+14$ | | 37. | $-23+8$ | |
| 38. | $-15+-18$ | | 39. | $-15-(-6)$ | |
| 40. | $7-24$ | | 41. | $-8-(-32)$ | |
| 42. | $15-(-12)$ | | 43. | $12\bullet-5$ | |
| 44. | $-9\bullet24$ | | 45. | $-13\bullet-13$ | |
| 46. | $\frac{72}{-6}$ | | 47. | $\frac{-55}{-5}$ | |
| 48. | $\frac{-84}{4}$ | | 49. | $(-15)^2$ | |

PROPORTIONAL RELATIONSHIPS & CONVERSIONS

| | | |
|-----|--|--|
| 50. | John rode 2 kilometers on his bike. His sister Sally rode 3000 meters on her bike. Who rode the farthest and how much farther did they ride (answer in km)? | |
| 51. | Jessica is measuring two line segments. The first line segment is 30 cm long. The second line segment is 500 mm long. How long are the two line segments together? (answer in cm) | |
| 52. | Lois wants to send a box of oranges to a friend by mail. The box of oranges cannot exceed a mass of 10 kg. If each orange has a mass of 200g, what is the maximum number she can send? | |
| 53. | Walt grew 10 centimeters in 1 year. He is now 1.6 m tall. How tall was he 2 years ago? | |
| 54. | Mary buys a reel of thread for sewing. There are 15 m of thread on the reel. She uses 210 cm. How much is left on the reel in centimeters? | |
| 55. | Peter is overweight. He is 105 kg. His aim is to lose 500 g per week. If he manages this, how many weeks will it be until he is 90 kg? | |
| 56. | Solve the following proportion: $\frac{x}{6} = \frac{10}{15}$ | |

| 57. | Solve the following proportion: $\frac{x}{8} = \frac{24.5}{28}$ | | | | | | | | | | | |
|--------------------|---|--------------------|--------------|----|---------|----|---------|-----|---------|-----|-----|--|
| 58. | Use a proportion to solve the following problem. Mr. Mangham can run 10 miles in 1.8 hours. At that pace, how long does it take him to run 4 miles? | | | | | | | | | | | |
| 59. | <p>Similar shapes have corresponding sides that are proportional. The following shapes are similar. Use a proportion to find the length of the missing side.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>12 ft</p> <p>7 ft</p> </div> <div style="text-align: center;">  <p>x ft</p> <p>10.5 ft</p> </div> </div> | | | | | | | | | | | |
| 60. | <p>John created the table below to show how the money earned by a music store changes depending on the number of CDs the store sells.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Number of CDs Sold</th> <th>Money Earned</th> </tr> </thead> <tbody> <tr> <td>84</td> <td>\$1,008</td> </tr> <tr> <td>95</td> <td>\$1,140</td> </tr> <tr> <td>106</td> <td>\$1,272</td> </tr> <tr> <td>c</td> <td>m</td> </tr> </tbody> </table> <p>Which expression could be used to find m, the dollars earned from selling c CDs?</p> <p style="display: flex; justify-content: space-around;"> A $m = 1008 - c$ C $m = c - 132$ </p> <p style="display: flex; justify-content: space-around;"> B $m = 12c$ D $m = c + 84$ </p> | Number of CDs Sold | Money Earned | 84 | \$1,008 | 95 | \$1,140 | 106 | \$1,272 | c | m | |
| Number of CDs Sold | Money Earned | | | | | | | | | | | |
| 84 | \$1,008 | | | | | | | | | | | |
| 95 | \$1,140 | | | | | | | | | | | |
| 106 | \$1,272 | | | | | | | | | | | |
| c | m | | | | | | | | | | | |
| 61. | <p>Rene created the table below to show how the minutes he reads changes depending on the number of days he reads.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Days</th> <th>Minutes Read</th> </tr> </thead> <tbody> <tr> <td>5</td> <td>175</td> </tr> <tr> <td>8</td> <td>280</td> </tr> <tr> <td>12</td> <td>420</td> </tr> <tr> <td>d</td> <td>m</td> </tr> </tbody> </table> <p>Which expression could be used to find m, the number of minutes Rene would read if he read for d days?</p> <p style="display: flex; justify-content: space-around;"> A $m = 105 \div d$ C $m = 175 - d$ </p> <p style="display: flex; justify-content: space-around;"> B $m = 35d$ D $m = 5d$ </p> | Days | Minutes Read | 5 | 175 | 8 | 280 | 12 | 420 | d | m | |
| Days | Minutes Read | | | | | | | | | | | |
| 5 | 175 | | | | | | | | | | | |
| 8 | 280 | | | | | | | | | | | |
| 12 | 420 | | | | | | | | | | | |
| d | m | | | | | | | | | | | |

62. Cameron created the table below to show a geometric pattern he was creating using tiles.

| Pattern Number | Tiles |
|----------------|-------|
| 3 | 25 |
| 8 | 30 |
| 13 | 35 |
| p | t |

Which expression could be used to find the number of tiles, t , needed for pattern number p ?

A $t = p - 22$

C $t = p + 22$

B $t = 8.3p$

D $t = p \div 3.75$

63. Fiona's flower shop uses the same number of flowers in each fall bouquet. The table below shows the relationship between the number of bouquets, b , and the number of flowers used, f .

| | | | | |
|-------------------------|----|-----|-----|-----|
| Number of bouquets, b | 5 | 9 | 13 | 17 |
| Number of flowers, f | 60 | 108 | 156 | 204 |

Based on the information in the table, which expression could be used to find f , the number of flowers needed to make b bouquets?

A $f = b \cdot 12$

C $f = b - 55$

B $f = b + 55$

D $f = \frac{b}{12}$

64. Carla's Catering Service uses the same amount of orange juice for every guest. The table below shows the relationship between the number of guests, g , and the number of gallons of orange juice served, j .

| | | | | |
|------------------------------|----|-----|-----|-----|
| Number of guests, g | 84 | 147 | 210 | 273 |
| Gallons of orange juice, j | 4 | 7 | 10 | 13 |

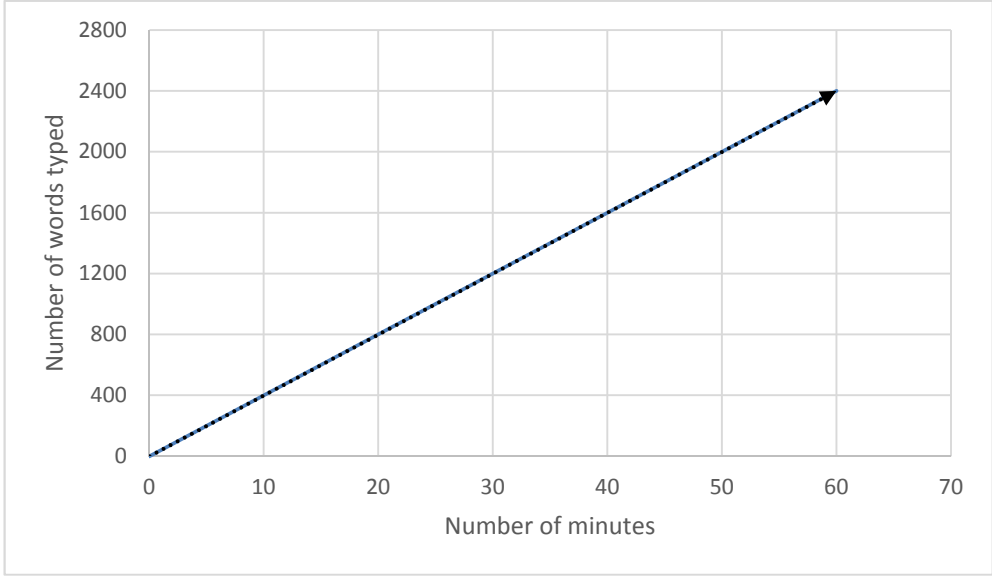
A $j = 21g$

C $j = g - 80$

B $j = g + 80$

D $j = \frac{g}{21}$

THE PROFESSIONAL TYPIST

| 65. | <p>A professional typist can typically type 50 words per minute.</p> <p>Graph the relationship described above on a piece of graph paper. Use minutes on the x-axis and words typed on the y-axis.</p> | | | | | | | | | | | | | | | | |
|-------------------|---|-------------------|-----------------------|---|---|----|-----|----|-----|----|------|----|------|----|------|----|------|
| 66. | <p>Write an equation relating the number of words typed, w, in terms of the time, t, in minutes. What information do the numbers in the equation represent? Explain your reasoning in words.</p> | | | | | | | | | | | | | | | | |
| 67. | <p>The graph below shows the number of words typed by Donald over a 60 minute period of time. Write an equation relating the number of words typed in terms of the time in minutes.</p>  <table border="1"><caption>Data points from the graph</caption><thead><tr><th>Number of minutes</th><th>Number of words typed</th></tr></thead><tbody><tr><td>0</td><td>0</td></tr><tr><td>10</td><td>400</td></tr><tr><td>20</td><td>800</td></tr><tr><td>30</td><td>1200</td></tr><tr><td>40</td><td>1600</td></tr><tr><td>50</td><td>2000</td></tr><tr><td>60</td><td>2400</td></tr></tbody></table> | Number of minutes | Number of words typed | 0 | 0 | 10 | 400 | 20 | 800 | 30 | 1200 | 40 | 1600 | 50 | 2000 | 60 | 2400 |
| Number of minutes | Number of words typed | | | | | | | | | | | | | | | | |
| 0 | 0 | | | | | | | | | | | | | | | | |
| 10 | 400 | | | | | | | | | | | | | | | | |
| 20 | 800 | | | | | | | | | | | | | | | | |
| 30 | 1200 | | | | | | | | | | | | | | | | |
| 40 | 1600 | | | | | | | | | | | | | | | | |
| 50 | 2000 | | | | | | | | | | | | | | | | |
| 60 | 2400 | | | | | | | | | | | | | | | | |
| 68. | <p>Determine if the following statements are true or false. Provide evidence based on the context of the problem that shows why the statements are true or false. Explain your reasoning in words.</p> <p>A. A person can decide if Donald types faster or slower than the professional typist by comparing Donald's graph to the professional's graph.</p> <p>B. A person can decide if Donald types faster or slower than the professional typist by comparing Donald's equation to the professional's equation.</p> | | | | | | | | | | | | | | | | |

PROBLEM SOLVING

69.-70. Directions: Choose 2 of the following problems. For each problem, solve showing all work and all steps on a separate sheet of paper. Include all diagrams, drawings, or tables that you create to solve the problem. Showing all your work is more important than getting the correct answer.

Rey came upon an ancient castle. The castle has 20 huge doors, each guarded by a fierce dragon and numbered 1 to 20. The wizard who owns the castle has a strict rule about use of the doors. Rey may enter through any door except number 1. Rey may only leave through a door whose number is a factor or a multiple of the number of the entry door. Rey may not exit through the door she entered. If Rey leaves through the wrong door, Rey will no longer be able to use the force. How many different entry/exit routes are possible in this ancient castle?

Jordan has a job delivering packages to schools in CISD. This morning her first stop was at Johnson where she picked up some packages. Her instructions were to drop off three-fifths of those packages at a second building and pick up six more packages. At her third stop, Rockenbaugh, she dropped off three-sevenths of her packages and picked up four. At her fourth stop, Durham, she dropped off three-fourths of her packages and picked up six. The fifth delivery was to Eubanks Intermediate where she left one-third of her packages and picked up two. On her sixth stop Jordan left one-half of her packages and picked up two. She then made her last delivery of six packages, all that she had left. Then she took a lunch break. How many packages did Jordan deliver before lunch?

At 7:00 one summer morning, Harry and Hermione hopped into their speedy motorboat and left Hogwarts Dock. They arrived at Dumbledore Wharf 35 minutes later. During the busy summer months, a car ferry departs from Dumbledore Wharf every 5 minutes. Tourists crowd onto the ferry for the 55 minute ride to Hogwarts Dock. If Harry and Hermione followed the route that the car ferries take, how many car ferries did they see on their trip? (Hint: The answer is NOT 11. The answer requires work to solve.)

You have \$1000 in one dollar bills. Arrange the \$1000 in 10 envelopes so that you can give Mr. Mangham any amount ranging from \$1 to \$1000 (only whole dollar amounts, no cents). For example, if Mr. Mangham asks for \$573, you can give him some combination of envelopes and their total will add up to exactly \$573.

The Cindi Arnold School for the Gifted has 1,000 students and 1,000 lockers. The lockers are numbered from 1 to 1,000. The students enter the building one at a time.

- The first student opens all the lockers (multiples of 1).
- The second student begins with the second locker and closes all the lockers with even numbers (multiples of 2).
- The third student changes – either opening closed doors or closing open doors – all lockers that are multiples of 3.

This pattern continues until all students walk past all the lockers. After the last student has gone past all the lockers, which lockers are open?